



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,115	02/25/2002	Jeff Solum	100.255US01	6841
34206	7590	05/19/2006	EXAMINER	
FOGG AND ASSOCIATES, LLC P.O. BOX 581339 MINNEAPOLIS, MN 55458-1339			NGUYEN, THUAN T	
			ART UNIT	PAPER NUMBER
			2618	

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/084,115	<b>Applicant(s)</b> SOLUM, JEFF	
	<b>Examiner</b> THUAN T. NGUYEN	<b>Art Unit</b> 2618	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1-36 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

3. Claims 1-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kintis et al. (U.S. Patent No. 6,535,720 B1).

Regarding claim 1, Kintis discloses “a wireless distribution system, comprising: a plurality of remote units distributed in a coverage area to receive wireless signals; a plurality of input ports to receive signals comprising the wireless signals provided by the plurality of remote units; a plurality of input power monitors operatively connected to one or more of the plurality of input ports to determine power levels of signals received at the input ports; a plurality of variable gain controllers to control the gain of signals received at the one or more of the plurality of input ports in response to a plurality of corresponding control signals; a node to combine a plurality of signals from the plurality of input ports; and a controller to provide the plurality of corresponding control signals to individually control each of the variable gain controllers” (Fig. 1, and col. 1/line 59 to col. 3/line 57).

Kintis does not often use terms “wireless” and “remote units... to receive wireless signals”; however, Kintis suggests and teaches that Kintis’ system related to wireless communications and the power control system of concern for a multi-carrier base station transmitter and the power control technique is for individually controlling the power levels of an arbitrary number of RF carriers (col. 1/lines 5-12) and further on column 3/lines 40-55 as the Kintis’ technique can be used in a wide range of wireless or other multi-channel transmit applications and not limited to any particular protocol. Therefore, it would have been obvious to one of ordinary skill in the art to apply Kintis’ power control technique in a wireless distribution system comprising a plurality of remote units in the system for receiving wireless signals in a coverage area; and the technique of individually controlling the power level of each base station including variable gain controller within each base station transmitter.

As for claims 2-4, Kintis discloses “wherein the controller provides control signals based on a weighting function”; “wherein the weighting function is proportional to power levels determined by the input power monitors such that a combined power does not exceed a predetermined level”; and “comprising a combined power monitor to determine the combined power level of signals combined at the node” (col. 3/lines 20-31).

As for claims 5-7, Kintis further discloses “wherein the plurality of input power monitors are operatively connected to the plurality of input ports to determine power levels of signals received at the input ports so that an upstream combined signal level does not exceed a predetermined level”; “wherein the signals received at the input ports comprise a frequency spectrum that is digitized for distribution over the wireless distribution system”; and “wherein the digitized wireless spectrum is transmitted, at least in part, over a fiber optic transmission

Art Unit: 2618

line” (Figs. 1 & 2, and col. 5/line 40-67 for digital based power control system, with power detection system as noted in col. 4/lines 10-58, with a plurality of reference signals setting for controlling the power levels of the wireless digital distribution system).

As for claims 8 and 9, Kintis discloses “ wherein one or more of the variable gain controllers comprises a filter” and “wherein the filter comprises an adaptive filter” (col. 6/lines 15-19 for a multi-carrier filter 113 regarding as an adaptive filter for filtering multi-carrier signals).

As for claim 10, Kintis discloses “comprising a transmission link to transmit the signals combined at the node to at least one upstream node where the combined signals may be further combined with other signals” (Fig. 1 at combined upstream node 30, refer to col. 3/lines 1-19).

As for claim 11, Kintis shows further “comprising at least one combined power monitor operatively connected to an output of the upstream node to monitor the power level of the signals combined at the at least one upstream node and at least one variable gain controller to control the power level of signals input to at least one upstream node such that the power level at the upstream node does not exceed a predetermined level” (col. 4/lines 10-col. 5/line 8, with the power limiter within the power detection system for monitoring and detecting the power levels under the comparison between active reference power levels).

Regarding claims 12-14, Kintis discloses “a method for controlling the signal levels of a wireless distribution system, the method comprising: receiving wireless signals at a plurality of remote units distributed in a coverage area; providing signals from the remote units to a plurality of input ports; monitoring input power levels of the signals received at one or more of the plurality of input ports; combining signals from the plurality of input ports at a node;

Art Unit: 2618

determining individual control signals for each of the input ports based on a weighting function that is proportional to the monitored input power levels such that the combined power does not exceed a predetermined level, and gain controlling the signals received at the input ports in response to the control signals”; “comprising monitoring the combined power level of signals combined at the node” and “a method for controlling the signal levels of a wireless distribution system, the method comprising: receiving wireless signals at a plurality of remote units distributed in a coverage area; providing signals from the remote units to a plurality of input ports; monitoring the input power level of the signals received at each of the input ports; controlling the gain of the signals received at each of the input ports in response to a control signal; combining the signals from the plurality of input ports at a node; monitoring power levels of the combined signals; determining weights for a weighting function that is proportional to power received at each input port, as determined by the input power monitors such that the power of the combined signals does not exceed a predetermined level; and providing the control signals to each input port based on the weighting function” (refer to claims 1-11 above for same features in the system claims as in the method claims).

Regarding claims 15-17 and 28-22, these claims for “a wireless distribution system, comprising: a plurality of remote units distributed in a coverage area to receive wireless signals and to provide the wireless signals through the distribution system to one or more input ports; a plurality of input power monitors operatively connected to the one or more input ports to determine power levels of the wireless signals received at the input port; a plurality of variable gain controllers to control the gain of the wireless signals received at the one or more input ports based on a predetermined threshold wherein a saturation level is not reached”; and “a wireless

Art Unit: 2618

distribution system comprising: a plurality of remote units distributed in a coverage area to receive wireless signals and to provide the wireless signals through the distribution system to one or more input ports; a plurality of input power monitors operatively connected to one or more of the input ports to determine power levels of the wireless signals received at the input ports; a plurality of variable gain controllers to control the gain of the wireless signals received at one or more of the input ports; a node to combine the wireless signals from the plurality of input ports; a combined power monitor to determine a power level of the signals combined at the node; and a controller to provide control signals to control one or more of the variable gain controllers so that an overflow condition does not occur at the node” with its corresponding method are rejected for the reasons given in the scope of system claims 1-11 as disclosed above.

Regarding claim 23-31 and 32-36, these claims for “a digital expansion unit, comprising: a plurality of input ports to receive signals from a plurality of digital remote units distributed in a coverage area; a node to digitally combine signals from the input ports; a plurality of input power monitors operatively connected to one or more of the input ports to determine the level of signals received at the input ports, a plurality of gain controllers to adjust the gain of signals received at some or all of the input ports; a combined power monitor to determine the combined signal level of signals combined at the node; and a controller to provide control signals to control one or more of the gain controllers wherein an overflow condition is avoided for signals combined at the node” and “a wireless distribution system comprising one or more digital expansion units” with its corresponding method are rejected for the reasons given in the scope of system claims 1-11 as disclosed above.

Art Unit: 2618

***Conclusion***

**4. Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to the New Central Fax number:**

(571) 273-8300, (for Technology Center 2600 only)

Hand deliveries must be made to Customer Service Window,  
Randolph Building, 401 Dulany Street, Alexandria, VA 22314.

**5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Thuan Nguyen whose telephone number is (571) 272-7895.**

The examiner can normally be reached on Monday-Friday from 9:30 AM to 7:00 PM, with alternate Fridays off.

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Division or Art Unit 2618.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tony T. Nguyen  
Art Unit 2618  
May 09, 2006



**TONY T. NGUYEN  
PATENT EXAMINER**